



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/812,255

03/29/2004

Francesco R. DiMambro

SUN-P7607

2746

57913 7590 08/23/2007
SUN MICROSYSTEMS, INC.
c/o PARK VAUGHAN & FLEMING, LLP
2820 FIFTH STREET
DAVIS, CA 95618

EXAMINER

VU, THONG H

ART UNIT

PAPER NUMBER

2616

MAIL DATE

DELIVERY MODE

08/23/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/812,255

Applicant(s)

DIMAMBRO, FRANCESCO R.

Examiner

Thong H. Vu

Art Unit

2616

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 March 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-26 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

1. Claims 1-26 are pending.

Claim Rejections - 35 USC § 101

2. the claimed invention is directed to non-statutory subject matter.

Claims 1, 13, 14 do not completely include all elements of the invention as described in the abstract in order to provide a concrete, useful and tangible results.

the disclosed invention is inoperative and therefore lacks utility.

i.e.: "a completion lines that allow the software to locate the individual packets"
[spec., page 4 line 24]. It's undue experiment to understand what is the completion lines.

Claim Rejections - 35 USC § 112

3. Claims 1,13,14,20 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

- Completion lines, completion descriptors are Non-descriptive materials.

4. Claims 1,13,14 and 20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

- Claims 1,13,14 does not include the second payload and hybrid buffer which is part on invention.

- Claim 20 recites the hybrid buffer but claims 1-19 are not.

Claim Objections

5. Claims 1,13,14 and 20 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form.

- Claims 1,13 recite the first set or packet (without any comparison to the second set) and null packet; claim 14 recites the location and length of header and payload which are well-known in the art. Claim 20 details the hybrid buffer.

Double Patenting

6. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 20-26 are rejected on the ground of nonstatutory double patenting over claims 1-20 of U. S. Patent No. 6,480,489 B1 ('489) since the claims, if allowed, would improperly extend the "right to exclude" already granted in the patent.

The subject matter claimed in the instant application is fully disclosed in the patent and is covered by the patent since the patent and the application are claiming common subject matter, as follows:

('489) 1. A method of storing a portion of a packet in a host computer memory, comprising: receiving a first packet at a communication interface; receiving a second packet at said communication interface; storing a header portion of said first packet in a hybrid storage area of a host computer; if said first packet includes a data portion, storing said data portion in a data storage area of said host computer; and if said second packet is smaller than a predetermined size, storing said second packet in said hybrid storage area.

(Application) 20. A computing device, comprising:
a communication interface configured to transfer packets from a communication link to the computing device;
software for operating the communication interface;
payload memory buffers for receiving payloads of packets transferred from the communication interface;
hybrid memory buffers for receiving headers of the packets transferred from the communication interface and completion lines configured to facilitate processing of the packets by the software;
a set of completion descriptors configured for the communication interface to use to signal the software that one or more packets have been transferred to the computing device;
wherein said completion lines in a first hybrid buffer include:
a payload completion line configured to identify a first payload buffer in which payloads of one or more of the packets are stored; and
per-packet completion lines configured to identify locations of the packets' payloads in the first payload buffer and locations of the packets' headers in the first hybrid buffer.

Furthermore, there is no apparent reason why applicant was prevented from presenting claims corresponding to those of the instant application during prosecution of the application which matured into a patent. See also MPEP § 804.

Claim Rejections - 35 USC § 103

Claims 20-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Iyer et al [Iyer 2005/0240745 A1] in view of Hammond et al [Hammond 5,774,686].

7. As per claim 20, Iyer discloses A computing device, comprising:

a communication interface configured to transfer packets from a communication link to the computing device [Iyer, a high speed memory control and I/O system, 0041];
software for operating the communication interface [Iyer, the program instructions, 0045];

payload memory buffers for receiving payloads of packets transferred from the communication interface [Iyer, FIFO, 0047-0048];

hybrid memory buffers for receiving headers of the packets transferred from the communication interface and completion lines configured to facilitate processing of the packets by the software [Iyer, the hybrid memory and pad the remaining with null, 0312];

However Iyer does not explicitly detail

a set of completion descriptors configured for the communication interface to use to signal the software that one or more packets have been transferred to the computing device; wherein said completion lines in a first hybrid buffer include a payload completion line configured to identify a first payload buffer in which payloads of one or more of the packets are stored; and per-packet completion lines configured to identify locations of the packets' payloads in the first payload buffer and locations of the packets' headers in the first hybrid buffer.

It was well-known in the art that a hybrid system could identify the locations of handlers (or data structures) [Hammond, Fig 4b, col 9 lines 12-52] and configure including descriptor table (or set of completion descriptors) and handlers [Hammond, col 13 line 26-col 14 line 10, Fig 7] and the use of two instructions sets: a first instruction set and second instructions set [Hammond, col 2 lines 15-33]

An Official Notice is taken that the technique of reassembly data with high performance network interface is well-known in the art wherein the header may be packed in to a buffer and the payload data may be stored consecutively in the selected buffers [see Philbrick reference].

Another Official Notice is taken that the header length, payload length, an offset the payload, checksum type, identify the location of the payload were well-known in the art [see Burton reference]

Therefore it would have been obvious to an ordinary skill in the art at the time the invention was made to incorporate the technique of identify the location of packet payload in the buffer and location of header in the hybrid memory system as taught by Hammond into the Iyer's apparatus in order to utilize the hybrid memory.

Doing so would provide a dynamic control and transfer multiple packets via the hybrid system.

8. As per claim 21, Iyer-Hammond disclose a null completion line indicating that no more completion lines are stored in the hybrid buffer as inherent feature of null packet.

9. As per claim 22, Iyer-Hammond disclose a first completion descriptor used by the communication interface to signal the transfer of a first set of packets is configured by

the communication interface to include only the identity of the hybrid buffer in which headers of the first set of packets are stored [Iyer, hybrid memory, 0312].

10. As per claim 23, Iyer-Hammond disclose said payload completion line further comprises a set of parameters common to the one or more packets; and the set of parameters comprises a checksum type as inherent feature of hybrid memory operations.

11. As per claim 24, Iyer-Hammond disclose each said per-packet completion line corresponds to one packet and comprises a length of a header of the corresponding packet; and a length of the payload of the corresponding packet as inherent feature of hybrid memory operations.

12. As per claim 25, Iyer-Hammond disclose each said per-packet completion line further comprises one or more of an offset of the payload in the first payload buffer; and an offset of the header in the first hybrid buffer as inherent feature of hybrid memory operations.

13. As per claim 26, Iyer-Hammond disclose each said per-packet completion line further comprises a checksum of the corresponding packet as inherent feature of hybrid memory operations.

Claim Rejections - 35 USC § 102

Claims 1-19 are rejected under 35 U.S.C. 102(e) as being anticipated by Iyer et al [Iyer 2005/0240745 A1].

14. As per claim 1, Iyer discloses A method of transferring packets from communication hardware to a host computing device, the method comprising:
- receiving a set of packets at a communication interface [Iyer, a first set of packet, 0310];
- in a first buffer of a host computing device, writing a first completion line configured to identify a first payload buffer in which payloads of a first subset of the packets are stored [Iyer, a cache memory is completely full, 0043; identified location, 0316];
- for each packet in the set of packets, writing a corresponding per-packet completion line in the first buffer [Iyer, written into memory, 0137];
- after writing said per-packet completion lines, writing a null completion line; and
- signaling the host computing device that a set of packets has been transferred [Iyer, the hybrid memory and pad the remaining with null, 0312].
15. As per claim 2, Iyer discloses in the first buffer, writing a second completion line configured to identify a second payload buffer in which payloads of a second subset of the packets are stored [Iyer, hybrid memory, 0312].
16. As per claim 3, Iyer discloses said signaling comprises writing a single completion descriptor to identify the first buffer [Iyer, identified location, 0316].
17. As per claim 4, Iyer discloses said completion descriptor comprises only said first buffer identity [Iyer, identified location, 0316].
18. As per claim 5, Iyer discloses said first completion line is configured to identify the first payload buffer [Iyer, identified location, 0316].

Art Unit: 2616

19. As per claim 6, Iyer discloses said first completion line further comprises a checksum type field and a checksum start field; and said checksum type field and said checksum start field apply to every packet in the first subset of packets as inherent feature of hybrid memory operations.

20. As per claim 7, Iyer discloses said writing a per-packet completion line comprises packing said per-packet completion lines into the first buffer as inherent feature of hybrid memory operations.

21. As per claim 8, Iyer discloses packing headers of the packets into the first buffer [Iyer, header, 0542].

22. As per claim 9, Iyer discloses each said per-packet completion line comprises length of a header of the corresponding packet; and a length of a payload of the corresponding packet as inherent feature of hybrid memory operations.

23. As per claim 10, Iyer discloses each said per-packet completion line further comprises an offset of the payload of the corresponding packet within a buffer in which the payload is stored; and a checksum of the corresponding packet as inherent feature of hybrid memory operations.

24. As per claim 11, Iyer discloses each packet in the set of packets is part of the same communication connection as inherent feature of hybrid memory operations.

25. As per claim 12, Iyer discloses at the host computing device, after said signaling reading said per-packet completion lines until encountering said null completion lines; and using said per-packet completion lines to access headers and payloads of the corresponding packets as inherent feature of hybrid memory operations.

Art Unit: 2616

26. As per claim 13, Iyer discloses A computer readable medium storing instructions that, when executed by a computer, cause the computer to perform a method of transferring packets from communication hardware to a host computing device, the method comprising:

receiving a set of packets at a communication interface [Iyer, a first set of packet, 0310];
in a first buffer of a host computing device, writing a first completion line configured to identify a first payload buffer in which payloads of a first subset of the packets are stored [Iyer, a cache memory is completely full, 0043; identified location, 0316];
for each packet in the set of packets, writing a corresponding per-packet completion line in the first buffer [Iyer, written into memory, 0137];
after writing said per-packet completion lines, writing a null completion line; and
signaling the host computing device that a set of packets has been transferred [Iyer, the hybrid memory and pad the remaining with null, 0312].

27. As per claim 14, Iyer discloses A computer readable medium containing a data structure configured for describing multiple packets to a host computing device, the data structure comprising:

one or more headers of packets being transferred from communication hardware to the host computing device [Iyer, a first set of packet, 0310]; and
for each of the packets, a corresponding per-packet completion line configured to identify [Iyer, a cache memory is completely full, 0043; identified location, 0316]:
a length of a header of the corresponding packet [Iyer, packet header, 0542]; a length of

Art Unit: 2616

a payload of the corresponding packet [Iyer, payload, 0463]; and information configured to identify a location of the payload [Iyer, identified location, 0316].

28. As per claim 15, Iyer discloses each said per-packet completion line further comprises a checksum of the corresponding packet as inherent feature of hybrid memory operations.

29. As per claim 16, Iyer discloses said data structure further comprises a payload completion line configured to identify a second data structure in which payloads of the packets are stored as inherent feature of hybrid memory operations.

30. As per claim 17, Iyer discloses said information in said per-packet completion line comprises an offset of the payload in the second data structure as inherent feature of hybrid memory operations.

31. As per claim 18, Iyer discloses said payload completion line further comprises a set of parameters applicable to each of the packets; and a first parameter in said set of parameters is configured to identify a checksum type as inherent feature of hybrid memory operations.

32. As per claim 19, Iyer discloses the headers are stored in fixed-sized portions of the data structure as inherent feature of hybrid memory operations.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thong H. Vu whose telephone number is 571-272-3904. The examiner can normally be reached on 6:00-3:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, *Lynn Feild* can be reached on 571-272-2092. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2616

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Thong Vu
Primary Examiner

A handwritten signature in black ink, appearing to read 'Thong Vu', with a horizontal line underneath.

THONG VU
PRIMARY PATENT EXAMINER